ARGUMENT

1. Premature Final Rejection

As explained in M.P.E.P. 706.07(d),

> "If, on request by applicant for reconsideration, the primary examiner finds the *final rejection to have been premature, he or she should withdraw the finality of the rejection.* The finality of the Office action *must* be withdrawn while the application is still pending." (*emphasis added*).

Further, it is well settled that MPEP 707.07(f) requires the Examiner to answer all material that is traversed. In particular, MPEP 707.07(f) states that,

> "where the applicant traverses any rejection, the examiner should, *if he or she repeats the rejection*, take note of the applicants' argument and *answer the substance of it.*" (*emphasis added*).

In addition, as noted in MPEP 707.07(f), the

> "importance of answering applicant's arguments is illustrated by *In re Herrmann*, 261 F.2d 598, 120 USPQ 182 (CCPA 1958) where the applicant urged that the subject matter claimed produced new and useful results. *The court noted that since applicant's statement of advantages was not questioned by the examiner or the Board of Appeals, it was constrained to accept the statement at face value and therefore found certain claims to be allowable.* See also *In re Soni*, 54 F.3d 746, 751, 34 USPQ2d 1684, 1688 (Fed. Cir. 1995) (*Office failed to rebut applicant's argument*)." (*emphasis added*).

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The above-identified final Office Action simply repeats the rejections of the previous Office Action (dated July 13, 2007), yet fails to address or rebut any of the applicant's arguments with respect to the traversed rejections.

In particular, in section [2] of the final Office Action entitled "**Response to Arguments**", the Examiner simply restates in abbreviated form the 35 USC §102(b) rejection from the July 13, 2007 Office Action. In section [3] of the final Office Action, the Examiner states the "rejection of claims under 102 and 103 are the same as in the previous non-final office action (mailed on 07/13/2007) and are incorporated herein by reference. These sections of the final Office Action clearly do not address the substance of any of the applicant's traversing arguments for patentability presented in response to the July 13, 2007 Office Action. Specifically, the "**Response**" section in substance states that the,

> "presented arguments have been fully considered but are held unpersuasive...Regarding claim 1, applicant argues that Lin does not disclose the claim limitations **and argues each limitation**. Similarly, applicant argues claims 24 and 30 as they recite the same limitations as those in claim 1...Examiner respectfully disagrees. Regarding claim 1, 24 and 30, **Examiner maintains that Lin does disclose the claim limitations and provides a detailed explanation below...Regarding claim 1 and similarly for claims 24 and 30, Lin discloses the following:**...Accordingly, Examiner maintains the rejection." (*emphasis added*)

Clearly, the re-recitation of what Lin discloses is not a response to the applicants' arguments. It fails to *answer the substance* or to *rebut* any of the applicants' arguments. For example, the applicants argued in the response to the July 13, 2007 Office Action that:

> "In regard to Claims 1, 5, 6, 10, 11 and 30, these claims include an

element reading "linearly expanding the dynamic range of the intensity levels of the image pixels so as to match the full dynamic intensity range available to a desired degree". The Lin reference does not teach this element. **The only time the Lin teachings result in a change to the intensity values of pixels in an image is in connection with step 40 (see Col. 3, lines 46-60 and Fig. 2). This step changes the color level of each color channel using a non-linear transform. This is evidenced by the curves shown in Fig. 7 which are used in look-up table form to change the color component of each pixel. Notice that the curves are not straight lines and so not linear.** (*emphasis added*).

The final Office Action makes no mention of this argument or why it is not considered persuasive. A reiteration that the normalization procedure taught in Lin somehow equates to the claimed linear expansion feature is not a response the aforementioned arguments. First, it does not address the fact that the only change to the pixel intensities made in Lin are via a **non-linear transform**. This is clearly not the claimed **"linear expansion"**. Further, the normalization taught in Lin is by its nature not an expansion of a range. Mathematically, the normalization of each pixel color level is done in Lin via Equation (1) found at Col. 2, line 58, which uses the red color channel (R) as an example. Notice that the calculation is based on R_{max} and R_{min}. These values respectively correspond to the maximum red level and the minimum red level found in the image being processed. The equation in no way expands the range between R_{max} and R_{min}. **It simply redefines the red pixel values within that range.** Whereas, the applicants claim **"linearly expanding the dynamic range of the intensity levels of the image pixels so as to match the full dynamic intensity range available to a desired degree** (as exemplified in Claim 1). Thus, in the narrow context of the example of Lin, the range between R_{max} and R_{min} would have to be expanded to comport to the foregoing language of Claim 1. The normalization procedure taught in Lin clearly does not accomplish this task.

In view of the above, it is the applicants' position that they were not afforded a full

and fair opportunity to respond to the substance of the rejections offered in prior Office Action, as there is no evidence in the current final Office Action that the Applicant's arguments were fully considered. Therefore, because the applicants provided arguments traversing all of the stated rejections in the prior Office Action response, and because these arguments were not addressed in the final Office Action, the Final Office Action fails to comply with MPEP 707.07(f). Consequently, the applicants respectfully submit that the finality of rejections offered in the Final Office Action is in error, and must therefore be withdrawn. As such, the applicants respectfully request immediate withdrawal of the finality of the rejection of Claims 1-7, 10, 11, 21, 22, 24, 25, 27, 29 and 30.

Further, since the current final Office Action has not addressed the substance of any of the applicants' prior arguments, applicants have repeated those arguments in the following sections so that they may be fully considered and answered in any reply to the present response.

2. Rejection of Claims 1, 5, 6, 10, 11, 24, 25, 27 and 30 Under 35 USC §102(b)

Claims 1, 5, 6, 10, 11, 24, 25, 27 and 30 were rejected under 35 USC §102(b) as being anticipated by Lin, U.S. Patent No. 5,812,286. The final Office Action asserted that Lin discloses each and every element of the applicants' claimed invention. The applicants respectfully disagree.

In regard to Claims 1, 5, 6, 10, 11 and 30, these claims include an element reading "linearly expanding the dynamic range of the intensity levels of the image pixels so as to match the full dynamic intensity range available to a desired degree". The Lin reference does not teach this element. The only time the Lin teachings result in a change to the intensity values of pixels in an image is in connection with step 40 (see Col. 3, lines 46-60 and Fig. 2). This step changes the color level of each color channel using a non-linear transform. This is evidenced by the curves shown in Fig. 7 which are used in look-up table

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form to change the color component of each pixel. Notice that the curves are not straight lines and so not linear.

Additionally, the Lin reference does not teach the claimed element reading "determining whether the linearly expanded intensity levels of the image pixels are evenly distributed". Nowhere in the Lin reference is the even distribution of pixel intensity values mentioned, or even suggested. Granted, the Examiner equates a curve fitting step of Lin to the claimed determination. More particularly, the Examiner states that the curve fitting modifies the image only when the original image does not already fit the curve, i.e., when pixel levels are not evenly distributed. However, the applicants claim "applying a correction factor to the linearly expanded intensity level of each pixel in the image to produce a corrected intensity value for each pixel and evenly distributed intensity levels". This is done "whenever the linearly expanded intensity levels of the pixels are determined not to be evenly distributed". This is inherently different than performing a curve fitting procedure that would allegedly result in no change when the pixel levels are evenly distributed. In the Examiner's scenario the image is always processed using the curve fitting step, regardless of whether the pixel levels are evenly distributed. This would result in a cost of processing and potential for the addition of noise to an image where no change is needed. In the claimed process, the foregoing is avoided by first "determining whether the linearly expanded intensity levels of the image pixels are evenly distributed", and then "applying a correction factor" whenever "the linearly expanded intensity levels of the pixels are determined not to be evenly distributed". Thus, the claimed process is clearly different from the Lin teachings, and has advantages not recognized in the reference.

The Examiner also implies that Lin's curve fitting procedure creates an equal distribution of intensity levels as claimed by the applicants. It is the applicants' position that this is not the case. Nowhere in the Lin reference is it suggested that its curve fitting procedure results in an equal distribution of pixel intensity levels.

A prima facie case of anticipation is established only when the Examiner can show that the cited reference teaches each of the claimed elements of a rejected claim. In this

case, Lin lacks a teaching of the applicants' claimed linear expansion, determining and application features. Thus, the rejected claims recite features that are not taught in cited art, and as such a prima facie case of anticipation cannot be established. It is, therefore, respectfully requested that the rejection of Claims 1, 5, 6, 10, 11 and 30 be reconsidered based on the novel claim language exemplified in Claim 1:

> "linearly expanding the dynamic range of the intensity levels of the image
> pixels so as to match the full dynamic intensity range available to a
> desired degree; determining whether the linearly expanded intensity levels
> of the image pixels are evenly distributed; and whenever the linearly
> expanded intensity levels of the pixels are determined not to be evenly
> distributed, applying a correction factor to the linearly expanded intensity
> level of each pixel in the image to produce a corrected intensity value for
> each pixel and evenly distributed intensity levels".

In regard to Claims 24, 25 and 27, these claims include elements reading "establish[ing] a linear intensity correction transform that maps the original intensity level of each pixel in the image to a linearly expanded intensity level, [and] apply[ing] the linear intensity correction transform to each pixel of the image". The Lin reference does not teach these elements. As stated previously, the only time the Lin teachings result in a change to the intensity values of pixels in an image is in connection with step 40 (see Col. 3, lines 46-60 and Fig. 2). This step changes the color level of each color channel using a non-linear transform. This is evidenced by the curves shown in Fig. 7 which are used in look-up table form to change the color component of each pixel. Notice that the curves are not straight lines and so not linear.

Additionally, the Lin reference does not teach the claimed element reading "determine whether the linearly expanded intensity levels of the image pixels are evenly distributed". Nowhere in the Lin reference is the even distribution of pixel intensity values ever mentioned. Granted, as stated previously, the Examiner equates a curve fitting step of Lin to the claimed determination. More particularly, the Examiner states that the curve fitting

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modifies the image only when the original image does not already fit the curve, i.e., when pixel levels are not evenly distributed. However, the applicants claim "applying a gamma correction factor to the linearly expanded intensity level of each pixel in the image to produce a corrected intensity value for each pixel". This is done "whenever the linearly expanded intensity levels of the pixels are determined not to be evenly distributed". This is inherently different than performing a curve fitting procedure that would allegedly result in no change when the pixel levels are evenly distributed. In the Examiner's scenario, the image is always processed using the curve fitting step, regardless of whether the pixel levels are evenly distributed. This would result in a cost of processing and potential for the addition of noise to an image where no change is needed. In the claimed process, the foregoing is avoided because it is first "determine[d] whether the linearly expanded intensity levels of the image pixels are evenly distributed", and then "applying a gamma correction factor" whenever "the linearly expanded intensity levels of the pixels are determined not to be evenly distributed". Thus, the claimed process is clearly different from the Lin teachings, and has advantages not recognized in the reference.

Here again, the Examiner also implies that Lin's curve fitting procedure creates an equal distribution of intensity levels as claimed by the applicants. As before, it is the applicants' position that this is not the case. Nowhere in the Lin reference is it suggested that its curve fitting procedure results in an equal distribution of pixel intensity levels.

Thus, Lin lacks a teaching of the applicants' claimed establishing, applying, determining and application features. Accordingly, the rejected claims recite features that are not taught in cited art, and as such a prima facie case of anticipation cannot be established. It is, therefore, respectfully requested that the rejection of Claims 24, 25 and 27 be reconsidered based on the novel claim language exemplified in Claim 24:

> "employ the originally computed lowermost and uppermost intensity levels
> and the new lowermost and uppermost intensity levels to establish a linear
> intensity correction transform that maps the original intensity level of each
> pixel in the image to a linearly expanded intensity level, apply the linear

intensity correction transform to each pixel of the image, determine whether the linearly expanded intensity levels of the image pixels are evenly distributed, and whenever the linearly expanded intensity levels of the pixels are determined not to be evenly distributed, applying a gamma correction factor to the linearly expanded intensity level of each pixel in the image to produce a corrected intensity value for each pixel.".

3. Rejection of Claims 2-4, 7, 21 and 22 Under 35 USC §103(a)

Claims 2 and 3 were rejected under 35 USC §103(a) as being obvious over Lin in view of Hyodo, U.S. Patent No. 6,018,589. Claim 4 was rejected under 35 USC §103(a) as being obvious over Lin in view of Hyodo, and in further view of Iguchi et al., U.S. Patent Application Publication No. US 2001/0007599 (hereinafter Iguchi). Claim 7 was rejected under 35 USC §103(a) as being obvious over Lin in view of Gindele et al., U.S. Patent Application Publication No. US 2003/0228064 (hereinafter Gindele). Claim 21 was rejected under 35 USC §103(a) as being obvious over Lin in view of Liu et al., U.S. Patent Application Publication No. US 2004/0190789 (hereinafter Liu). And finally, Claim 22 was rejected under 35 USC §103(a) as being obvious over Lin in view of Liu, and in further view of Kuo et al., U.S. Patent No. 5,982,926 (hereinafter Kuo). It was contended in the Office Action that Lin teaches all the elements of the rejected claims with the exception of various claimed features that were contended to be taught in above cited secondary references. Thus, it was concluded that it would have been obvious to incorporate the teachings of the secondary references into Lin to produce the applicants' claimed invention. The applicants respectfully disagree with these contentions of obviousness based on the language of Claim 1 (i.e., the base claim for all these rejected claims).

As stated previously, Lin lacks a teaching of the applicants' claimed linear expansion, determining and application features. The Hyodo, Iguchi, Gindele, Liu and Kuo references also lack these features.

In order to deem the applicant's claimed invention unpatentable under 35 USC §103, a prima facie showing of obviousness must be made. To make a prima facie showing of obviousness, all of the claimed elements of an applicant's invention must be considered, especially when they are missing from the prior art. If a claimed element is not taught in the prior art and has advantages not appreciated by the prior art, then no prima facie case of obviousness exists. The Federal Circuit court has stated that it was error not to distinguish claims over a combination of prior art references where a material limitation in the claimed system and its purpose was not taught therein (*In Re Fine*, 837 F.2d 107, 5 USPQ2d 1596 (Fed. Cir. 1988)).

In the foregoing cases, the cited combinations lack a teaching of the applicants' claimed linear expansion, determining and application features. Thus, the applicants have claimed features not taught in the cited combinations, and which has advantages not recognized therein as described previously. Accordingly, no prima facie case of obviousness can be established in accordance with the holding of *In Re Fine*. This lack of a prima facie showing of obviousness means that the rejected claims are patentable under 35 USC §103(a). It is, therefore, respectfully requested that the rejection of Claims 2-4, 7, 21 and 22 be reconsidered based on the previously quoted non-obvious claim language exemplified in Claim 1.

4. Rejection of Claims 29 Under 35 USC §103(a)

Claim 29 was rejected under 35 USC §103(a) as being obvious over Lin in view of Liu. It was contended in the Office Action that Lin teaches all the elements of the rejected claims with the exception of the claimed gamma correction feature. However, it was further contended that this feature is taught in Liu. Thus, it was concluded that it would have been obvious to incorporate the teachings of Liu into Lin to produce the applicants' claimed invention. The applicants respectfully disagree with this contention of obviousness based on the language of Claim 24 (i.e., the base claim for the rejected claim).

As stated previously, Lin lacks a teaching of the applicants' claimed establishing,

applying, determining and application features. The Liu reference also lacks these features. Thus, the applicants have claimed features not taught in the cited combination, and which has advantages not recognized therein as described previously. Accordingly, no prima facie case of obviousness can be established in accordance with the holding of *In Re Fine*. This lack of a prima facie showing of obviousness means that the rejected claim is patentable under 35 USC §103(a). It is, therefore, respectfully requested that the rejection of Claim 29 be reconsidered based on the previously quoted non-obvious claim language exemplified in Claim 24.

5. The Objections to Claims 8, 9, 12-20, 23, 26 and 28

Claims 8, 9, 12-20, 23, 26 and 28 were objected to as being dependent upon a rejected base claim. The Examiner stated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, at this time the applicants respectfully decline to rewrite the objected to claims because it is their position that the independent claims from which these claims depend are patentable.

6. Summary

In view of the arguments set forth above, the applicants respectfully submit that Claims 1-30 are in condition for allowance as they are novel and nonobvious over the cited art. Accordingly, further examination and reconsideration of these claims is respectfully requested and allowance of at an early date is courteously solicited. In addition, applicants respectfully request that the finality of the present Office Action be withdrawn.

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Respectfully submitted
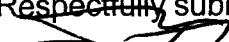
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